ABSTRACT

A gas mixture 2 containing a fuel, water and air is supplied to one end of a reforming room 6, and a reformed gas 4 containing hydrogen is discharged from the other end thereof. Two or more such reforming units are connected in series, and the upstream part of each reforming room is filled with a first catalyst 8a which catalyzes a partial oxidation reaction in an oxygen-rich environment, and the downstream part is filled with a second catalyst 8b which performs the reforming reaction. The gas mixture 102 which has been heated in a heating unit 104 passes through a distribution tube 108 and is distributed evenly to the reforming units 114. The reforming room is composed of a reforming tube 130 in which a reforming catalyst 112 is charged, or two or more such reforming tubes, parallel to each other. After being reformed the high-temperature reformed gas 118 is passed around the reforming tubes, and fed back to a manifold 116.